

**Georgia Technology Authority**

# State of Georgia Portal Strategy

Discovery Phase  
Preliminary Findings

Compiled by  
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## Executive Summary

The Georgia Technology Authority (GTA) has been developing a strategy for moving the state of Georgia to a best of breed, intention-based, electronically enhanced state government through the auspices of a new, state enterprise portal. Recognizing the potential breadth of scope in such an initiative, while understanding that such government portals are in their infancy, GTA spent two months researching the concept of portals, compiling industry and expert recommendations and studying private industry and government best practice examples. The results of the research and brainstorming sessions during the months of November and December, 2000, are contained in this "Findings" document.

This document is broken down into sections with the intent of each as follows:

### Portals and Their Permutations

This section explains the overall definition of portal as it pertains to electronically enhanced delivery of information and services and outlines the various "flavors" of portals currently in vogue.

### Stakeholder Expectations, Preliminary Business Requirements

This section represents GTA's preliminary understanding of what stakeholders expect and what electronically enhanced government via a state portal should provide at a minimum. These findings were based on research, best practice recommendations, other portal examples and GTA leadership direction. While this section also defines some features beyond the minimum requirements, market research and focus groups will be the true determinant in reaching final business

requirements. Naturally, business requirements will continue to change and evolve, which means that a successful portal must be dynamic in addressing continual changes.

### Preliminary Portal Vision

Building on GTA's understanding of the business requirements, the preliminary concept for a portal architecture and the vision of what electronically enhanced government can be, this section lays out the basic philosophy guiding GTA's vision for a state enterprise portal.

### Preliminary Architecture

Guided by a preliminary vision and early business requirements, GTA has devised a preliminary architecture for the State of Georgia portal. The proposed architecture describes, at a high-level, the relationships among the various components that are believed to be essential in building an extensible and scalable enterprise portal.

### Preliminary Issues

This section documents items of strong importance for which sufficient research has not yet been conducted to develop even a preliminary finding. These issues will be addressed in subsequent phases of the strategy development.

### Proposed Next Steps

This section identifies recommendations for proceeding beyond the discovery phase. Steps are not identified in a specific chronological order. Many of these actions can and must be conducted simultaneously in order to keep plan development moving forward as quickly as possible.



## Portals and Their Permutations

The term portal has already become an increasingly passé way of referring to a gateway for information and services. The Gartner Group defines portal as follows:

“Web sites targeted at specific audiences and communities, providing: content aggregation/delivery of information relevant to the audience, collaboration and community services, and services/applications access for the target audience—all delivered in a highly personalized manner.”

At a minimum, the Gartner Group believes that a portal should conform to the following qualifications known as the four C's:

- ♦ **Connection** to the resources of the Internet through search engines, shopping engines and other utilities.
- ♦ **Content** in the form of appropriate news, entertainment and instruction for interested users.
- ♦ **Commerce** involving access to electronic shopping and other commercial activities.
- ♦ **Community** of interest defined by ground rules and tools that enable participants to interact.

The Gartner Group's portal definition is intended to provide a mechanism for distinguishing true portals from web-enabled products and simple websites.

However, due to the increasingly radical evolution of technology, it has become inappropriate to link the concept of a portal to a particular technology such as the World Wide Web. Linking the portal concept to a particular technology or method of delivery limits the total effectiveness of a portal. Additionally,

doing so promotes the development of psuedo-portals, which are very specific types of portals such as voice and personal portals.

Rather than limit a portal to a particular technology or method of delivery, one can envision a portal that utilizes a number of delivery mechanisms. For example, a portal could have a separate interface for wireless, telephone, web, television and Teletype channels. Each of these channels would rely upon the same database of users, information and services, thus empowering the consumer with a myriad of options for interfacing with the organization. Therefore, a portal is best conceptualized as an electronic means of delivering information and services from an organization or a series of organizations.

Today, the focus on portals is centered on their application as a gateway for information and services delivered via the World Wide Web. Two distinct types of portals evolve from the Gartner Group's definition of a portal. These portal types include Internet and enterprise portals.

Breadth of information and overall scope serve as the primary distinction between the various portal types. Internet portals are for more general use than enterprise portals, whose purpose is to allow users to interact with a particular entity. Internet portals are broadly separated into two types: vortals and megaportals.

Vertical portals, or vortals, are the most narrowly focused legitimate Internet portal as defined by the GartnerGroup. Vortals are generally targeted at specific communities of interest and are subsequently intended for a niche audience.

Content delivered by a vortal includes news, general information and services regarding the area of interest. Some vortals may add services commonly found on megaportals, such as e-mail, scheduling and Internet searching capability in an attempt to become the point of entry to the Internet for those who constitute the vortal's targeted community. Although offering these additional services effectively blurs the rather distinct lines between a vortal and a megaportal, the narrow subject focus of the vortal prevents it from being classified as a megaportal. Popular vortals include The Motley Fool ([www.fool.com](http://www.fool.com)) and ivillage.com.

The megaportal is the next type of Internet portal. Megaportals address the entire Internet population rather than a single community of interest. These portals attempt to be all things to all people. Typical features include e-mail capability, scheduling and general news. Most of these portals have evolved from long-standing general Internet search engines such as Yahoo and AltaVista. This area has become increasingly competitive with the merger of traditional media companies and megaportals. The most notable examples of this convergence include Disney's acquisition of the Go Network and the AOL and Time Warner merger. In fact, the Gartner Group stresses the importance of the impact of megaportals as a continuing point of convergence between traditional media and digital media companies.

Enterprise portals are the other distinct type of portal. These portals are centered on the operations of an enterprise and thus offer a much narrower focus than even an Internet vertical portal. Enterprise portals offer additional "touch points" to the enterprise for users of the enterprise's services. These user groups can roughly be divided into internal users (employees) and external user groups (strategic partners, consumers, constituents).

Like Internet portals, enterprise portals fall under two general categories. The first type of enterprise portal is the vertical enterprise portal (VEP). Similar in scope to a vertical Internet portal, the vertical enterprise portal is limited to either a specific function, business process or enterprise subject area, such as a division, branch or product line. The second type of enterprise portal is the horizontal enterprise portal (HEP). It also mirrors its Internet counterpart, the megaportal, and provides a range of services and applications for the enterprise. A horizontal enterprise portal may consist of a number of vertical enterprise portals providing a baseline from which the user may enter a more tailored environment.

The presentation of information in an enterprise portal is inherently defined by its organizational structure. For an organization like the state of Georgia, an enterprise portal might be constructed with multiple points of entry. Each of these entry points would add another dimension of information for the portal user.

For example, the portal could consist of enterprise, functional, user and organizational orientations. The enterprise orientation of the portal would mask the organizational structure of the state of Georgia and serve as the base on which all the other portals rest. Additionally, because the enterprise orientation supersedes all categorization, it would have to rely upon intelligent agents to present the user with relevant information. Within this enterprise portal, information could also be organized in accordance with predefined, functional categories. The categories, in turn, would also cross over the organizational lines of the state of Georgia. Predetermined user categories offer another possible dimension to information presented through the portal.

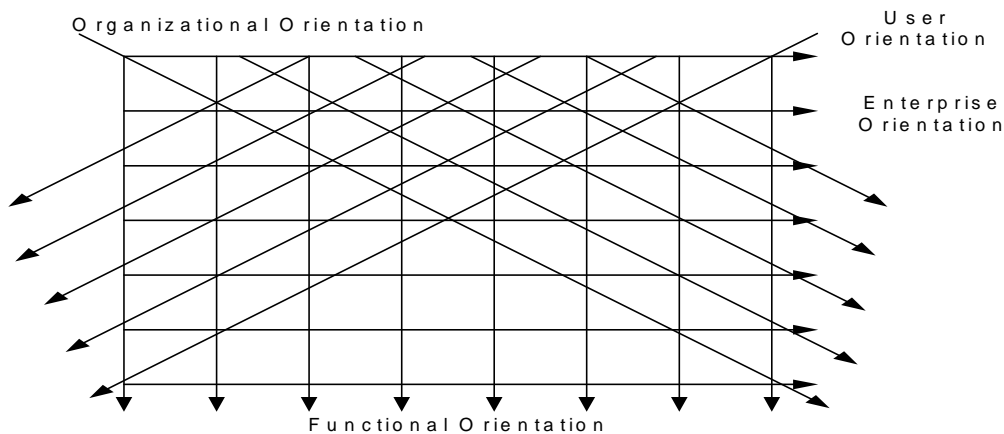
This would provide tailored information to users based upon their relationship to the state, such as state employee, constituent or lawmaker.

Lastly, the portal could also present information around the organizational structure of the state of Georgia. Doing so preserves the digital identity of those organizations that serve as the information base of the portal.

The term portal has undergone a fundamental change since it first became popular several years ago. Although originally used to describe websites with little interactivity, it now refers to an electronic gateway of information and services. This transformation is consistent with the increased importance of the Internet, and specifically the World Wide Web, as a meeting place, workspace and market

place for individuals and public and private enterprises. The term will probably continue to take on increased meaning as new methods of organizing and delivering information and services to users are derived.

***The following diagram represents the organizational structure of the portal. Each orientation provides an additional axis around which information can be packaged for the user.***





## Stakeholder Expectations and Preliminary Business Requirements

The number of Georgians who are discovering the convenience and immediacy of using the Internet for a variety of business and personal opportunities continues to grow. Because of this trend, state government will find itself increasingly pressured to provide convenient, immediate and secure interactive information, services and business processes that meet and exceed the expectations that its stakeholders have already come to expect from the private sector. Through development and deployment of an enterprise portal, Georgia is poised on the brink of an opportunity to bring innovative, effective, compassionate government into the very homes, businesses and institutions of its three high-level groups of stakeholders: citizens, businesses and other governments.

Besides these, two other high-level groups of stakeholders must be considered in planning for the state's enterprise portal. The first of these are those stakeholders for whom the Internet has removed traditional geographical boundaries, thereby enabling them to consider and take advantage of opportunities in locations that they would never even have recognized in the past. Through its portal, Georgia has the opportunity to attract these non-resident stakeholders in potentially new and economically advantageous ways.

The second of these stakeholders is Georgia state government itself. The portal will enable state government to improve its internal relations and processes, and to enhance its effectiveness and efficiency. The portal's underlying architecture will make it easier than ever before

for state entities to collaborate in mutually beneficial projects, thereby improving cooperation, enabling information and resource sharing and resulting in more accessible and cost-effective state information and services.

From a strategic planning perspective, it makes sense to break down some of these high-level groups into sub-groups, or segments to clearly identify critical business needs and requirements. This breakdown results in the following seven market segments or communities of interest as they relate to Georgia state government:

- Citizens to Georgia state government
- Businesses conducting business with Georgia state government
- Businesses operating in Georgia
- Other governments to Georgia state government
- State of Georgia agencies to one another
- State employees to Georgia state government
- Non-resident individuals to Georgia state government

For it to fully realize its potential and be truly successful, any strategic planning for the state's enterprise portal must recognize the expectations that these segments have for Georgia state government and include those requirements in planning and design. Market research, including conducting focus groups with a representative sampling from each stakeholder segment, will be key to fully identifying the full business requirements of a state enterprise portal. While all the segments may share certain expectations of a state portal, the strategic planning process should identify not only these



common expectations, but also recognize and include business requirements peculiar to each segment where possible.

## Stakeholder Expectations

### **I. Citizens to Georgia State Government**

The relationship between government and citizen is in the midst of a profound change. The speed and thrust of technology and the advent of the Internet have combined to create an environment that makes it possible for government to realize, in a breathtaking way, its sacred obligation to the constituents who empower it. With Internet-enabled information, services and processes, government can truly become the “servant of the people” it was originally intended to be. Ultimately, Georgia citizens should be able to conduct their relationships with state government in an intuitive, secure and respectful way, 24 hours a day, seven days a week, regardless of where they are, their familiarity with state government, their “door” into state information and/or services and their physical abilities, cultural and/or linguistic backgrounds.

As citizens become more accustomed to conducting their state business via the portal, they will expect increasing levels of sophistication and innovation. They will expect personalization of content and navigation, which will be determined by each citizen’s personal profiles, as well as use of existing state data.

One overriding concern to citizens that will probably not diminish over time is the privacy issue. Even as citizens expect the convenience of personalization, they will demand the highest levels of integrity for the security and privacy of their transactions and records.

### **II. Businesses Conducting Business with Georgia State Government**

The relationship between government and business is likewise undergoing a fundamental change due to the private sector’s growing use of and increasing dependence on the Internet as a powerful, worldwide medium for conducting business. As more businesses adopt an Internet model, it will become imperative for Georgia to capitalize on the power of the Internet by retooling its business processes to take advantage of this shift in order to leverage new and existing business relationships for more efficient and effective government.

Like citizens, businesses will expect government to use technology and newer mediums like the Internet to streamline its operations and enhance its business relationships in innovative ways. Unlike citizens, businesses will often look for ways to actively partner with the state to improve interaction, which the state should use to its advantage where appropriate. Also, like citizens, business will expect secure, private transactions and integrity of the data it gives and receives from government.

### **III. Businesses Operating in the State of Georgia**

Just as important as its relationship with the businesses with whom it conducts business, the state of Georgia must leverage technology on behalf of the businesses that operate within its auspices. The state of Georgia can improve and enhance its economy by using the power and immediacy of the Internet to cut through the bureaucracy traditionally associated with trying to establish and/or operate a business within governmental borders. By deploying an intention-based, state enterprise portal, Georgia can put the information and services cru-

cial to businesses—such as business licenses/permits, articles of incorporation, sales and income tax information and services—literally at their fingertips. By leveraging the power of state government to extend this medium to all corners of the state, Georgia can enable small and/or rural businesses to have many of the same information and process advantages that larger companies take for granted.

#### **IV. Other Governments to Georgia State Government**

Equally critical is state government's relationship to other government entities. States that use the Internet to shape and refine their relationships to other governments will quickly gain an advantage over states that do not. Georgia can use the Internet for fostering more productive partnerships between itself and other state, local and federal government entities. It does not take a great leap of imagination to see that state and federal use of the Internet should ultimately cut time and red tape in the federal/state funding, regulatory and information-dissemination relationship. Likewise, it seems clear that Georgia has a duty to leverage the power of the Internet to build and foster relationships with other government entities in order to share information, knowledge and perhaps even resources to provide convenience, avoid duplication of effort, take advantage of purchasing consortiums and, most importantly, promote the safety and well-being of its stakeholders.

Just like citizens and businesses, other governments will expect security, privacy and integrity in their electronic relationships with the state of Georgia.

#### **V. State of Georgia Agencies to One Another**

Perhaps the most significant change that the state's enterprise portal can produce is improved Georgia state government. The portal's concept and architecture will not only make it possible, but also mandate that state entities become less isolated and more cooperative to enable seamless delivery of state information and services.

State entities that currently maintain their own web presences may be threatened initially by the concept of a single door into seamless state information and services. They will have natural concerns about the quality, security and privacy of information and services for which they have traditionally been responsible. Further, there may be issues concerning competing project priorities and limited resources. Because a truly successful portal will be difficult without state agency buy-in, it will be critical for GTA to demonstrate the benefits of portal collaboration between GTA and state entities and between the entities themselves.

#### **VI. State Employees to State of Georgia Government**

A state of Georgia enterprise portal has the potential to make state employees more knowledgeable, more enabled and more productive in their daily work. Information, services and resources for state employees ultimately can be combined and delivered around the clock in a one-source way and not just from their brick-and-mortar agencies but from a wide variety of information sources throughout state government and beyond. This should make the lines between agencies more transparent and provide enhanced services and cost-effective convenience to both employees and the customers they serve.

Not only should employees' job performance be enhanced and their job satisfaction expanded, they will personally benefit from an enterprise portal by having access to employee personnel, benefit and other services on a 24 hour, seven-days-a-week basis, where appropriate. This will give them much greater flexibility in conducting their personal, and employee business, cut delays in processing times and enhance productivity by limiting the need to make in-person trips to get information, submit requests or resolve problems.

## **VII. Non-Resident Individuals to Georgia State Government**

Georgia can use the Internet to reach a worldwide audience, allowing them to learn about Georgia and its advantages in an immediate and convenient way. Georgia can broaden its economic base by promoting its natural resources, educational institutions and economic opportunities via the state portal. Through its portal, Georgia should leverage this chance to attract such stakeholders, not only to entice them to move here, but to provide them with access to our diverse resources—from agricultural products to technical school programs—in the convenience of their own locations.

Similar to previous stakeholder groups, non-resident stakeholders will expect high levels of security, privacy and integrity of transactions and data.

## **Preliminary Business Requirements**

GTA believes that the following are the requirements for the successful development of a single Georgia state enterprise portal.

### **Minimum Requirements**

- ♦ The Georgia state portal will present easy to understand, intention-based state information and services to the broadest spectrum of Georgians and other stakeholders, regardless of their physical abilities, cultural backgrounds or language (languages other than English will be introduced when the percentage of the population who speak this language reaches or exceeds some identified threshold).
- ♦ The structure of state government will not influence presentation or navigation and, in fact, will be transparent to stakeholders.
- ♦ All public record state information and currently web-enabled services will be available via state government's enterprise portal.
- ♦ The state of Georgia will need the ability to share information and processes between state entities.
- ♦ Priority services (based on market research) will be rolled out first.
- ♦ The Georgia state enterprise portal will provide convenient electronic access to state information and services on a statewide basis.
- ♦ The citizens of Georgia will have 24 x 7 availability to information and services (where appropriate) with a baseline help function.

- ♦ The integrity of all transactions will be guaranteed and compliant with all security-related regulatory requirements and best-practice recommendations.
- ♦ Privacy of transactions and the stakeholder data will be guaranteed and compliant with all regulatory requirements and best practice recommendations (opt in and/or opt out enabled and clearly communicated)
- ♦ Universal electronic access to state information and services should be provided on a statewide basis.
- ♦ Access to pertinent news, weather and local information of interest should be provided.
- ♦ Personalization should be provided.
- ♦ Stakeholders should have the ability to access and combine state information in personally meaningful ways.

#### **Desired Requirements**

- ♦ Access to all state information should be available regardless of where it resides and/or its format.
- ♦ All state information and all services should be available via the Georgia state enterprise portal.
- ♦ Innovative information and services should be made available through the collaborative efforts of non-traditional agency partners and agency consortiums.

## Preliminary Portal Vision

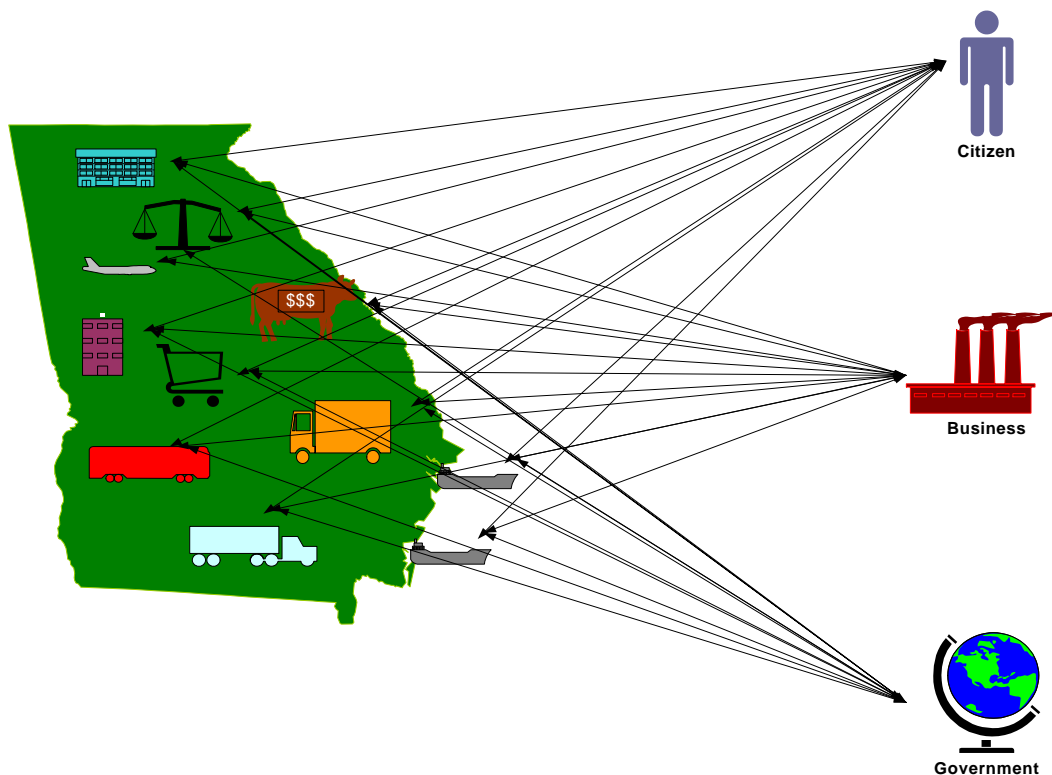
Most governments in technology-enabled countries today are promising various flavors of Internet portals as a gateway to many, if not all, government services. It is easy to imagine the use of such technology to facilitate those tasks that currently require a visit to the local bureaucracy, such as renewing a driver's license.

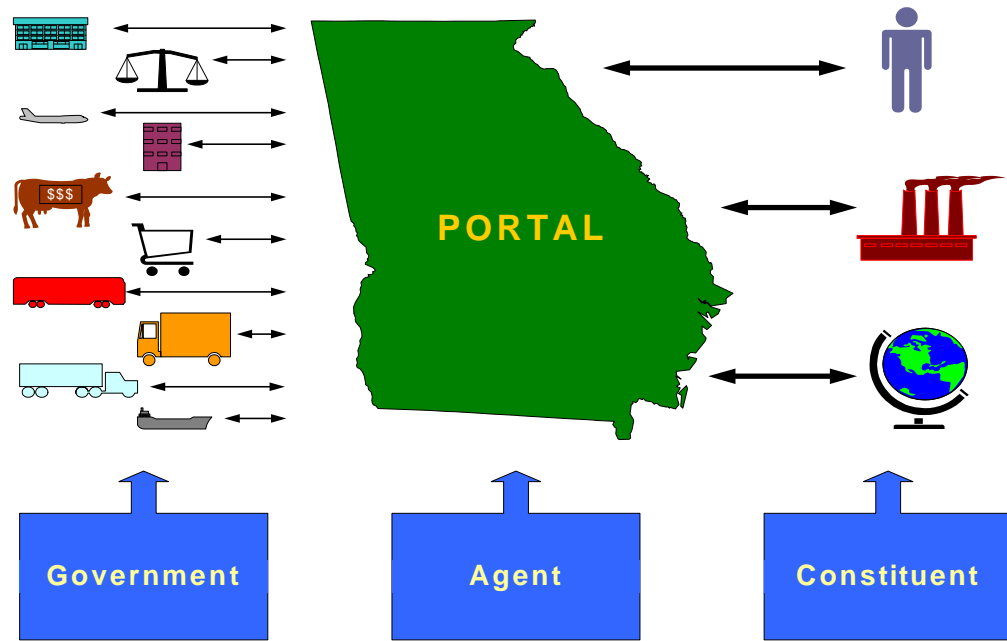
Government runs the risk, however, of simply replicating its existing bureaucracy online if the fundamental interaction between stakeholders is not reconsidered. Some states have already fallen into this trap, creating enterprise portals that simply mirror their complex organization structures.

Unfortunately, most stakeholders of state government, including its employees, are unable to understand the sometimes subtle distinctions between government agencies. It is one thing to stand in line for an hour to get a driver's license, but it's quite another to stand in line for an hour only to discover you were supposed to have gone to another office instead. GTA must address organizational complexity by developing the Georgia state enterprise portal around the goals of its stakeholders.

***Below:***

***Statewide services currently follow an organizational model.***





***Above: The portal manages the complexity by acting as an agent.***

An enterprise portal can reduce the complexity of government to constituents by logically arranging government structure to align with constituent intention. The development and operation of an enterprise portal can also reveal opportunities for efficiency gains by helping to identify interagency overlap and synergies.

The portal must act as an agent that works on the behalf of all stakeholders to create a more efficient and effective government. Both government and constituents will need to adapt to this concept. To make the transition as smooth as possible, the Georgia state enterprise portal must have three fundamental qualities. It must be:

- ♦ Intelligent,
- ♦ Supportive, and
- ♦ Trusted.

The following explores how the Georgia state enterprise portal can use technology and policy to attain these qualities.

### **Intelligent**

While decades of artificial intelligence research have failed to yield a British-speaking humanoid like C3PO from Star Wars, significant advances have been made in the field to provide pieces of an infrastructure that may be useful to an enterprise portal. Ironically, pioneering work in artificial intelligence was largely influenced by Herbert Simon's seminal book, *Administrative Behavior*. His study of bureaucratic behavior led to heuristic, or rules-bound, programming that has in turn led to theories of neural networks and expert systems. It seems fitting for a bureaucracy to borrow from these theories when developing the Georgia state enterprise portal.

Although science fiction often presents a dystopian vision of machines taking control from humans (Kubrick's *2001: A Space Odyssey* being perhaps the most terrifying example), we use this type of technology today in things like Automatic Braking Systems (ABS) in automobiles. When a driver brakes suddenly at a cer-

tain speed, the braking system software detects that the driver intent is to stop suddenly. Although many drivers know that this could cause the car to skid, it is still counterintuitive in an emergency to press and release the brake in rapid succession. The ABS system is designed to (1) detect the intent of the human host, (2) anticipate one of several possible scenarios, and (3) perform a designated appropriate action.

An enterprise portal must encapsulate intelligent systems if it is to avoid replicating the complex statewide organizational hierarchy. A few examples of how these technologies could be applied to the goals of the Georgia state enterprise portal are listed below.

### **Customer Relationship Management**

Customer Relationship Management software, or CRM, is used today on most leading e-tailers's websites to suggestively sell a person more goods or services. Amazon.com uses this technology to suggestively sell more books and CDs. The Georgia state enterprise portal could use this technology to connect more constituents to programs and services they may need.

Unfortunately, CRM software doesn't become useful right away. It takes a great deal of activity for trends to be discovered from a data-mining process. The Georgia state enterprise portal could be jumpstarted by using existing market data, such as readily available PRIZM market clusters. Although information about people living in a particular zip code is only somewhat accurate, it is able to provide general trends about a population ("many poor textile workers", "highest income in state", "watches public television"). Over time and with the user's permission, the portal could become less generic and more personalized to the individual using it.

### **Agents**

Autonomous intelligent agents are software programs designed to emulate human behaviors, automating repetitive tasks and anticipating needs of their human counterpart before they are required.

When applied to the concept of an enterprise portal, an intelligent, autonomous agent could serve on behalf of a stakeholder as he or she tries to accomplish a goal. For example, a freshman entering a public university in Georgia will need to interact with several state agencies before starting school: transcripts from local school systems must be sent to the Board of Regents, student loans and grants must be obtained from the Georgia Student Financing Commission and immunization records must be obtained from Public Health, among others. A software agent could be deployed on behalf of a student in this case to take care of details that do not require human intervention.

It is important to remember that stakeholder agents perform on behalf of an individual and not an organization. For example, a stakeholder may inform the agent to automate whatever tasks it can without disclosing confidential information. In addition, an individual should be able to perform any actions manually without interference by the agent.

### **Natural Language Processing**

During the 1980's, multiple disciplines in academia came together to create what is now called cognitive science. In an undoubtedly offensive simplification, cognitive scientists believe that intelligent systems arise out of language rather than rules-based systems such as agents. Although it came earlier and is much despised by those in the discipline today,

Joseph Weizenbaum's ELIZA computer program inspired many to study how humans might relate to a computer in a natural, conversational way.

Today, the Ask Jeeves website provides an excellent example of how this research into the interaction of computers and language can be used. Although this technology requires human coaxing, over time this type of system can lead to a very successful self-service knowledge base. For example, Microsoft pools all support questions related to its products into a knowledge base with a natural language interface.

Although we imagine this type of technology today primarily in the context of the web, it will be perhaps most useful if married with speech recognition technology and deployed in telephonic interfaces to the portal. Rather than navigating through annoying interactive voice response systems or attempting to surf the Web through a Wireless Access Protocol (WAP) enabled cell phone, an enterprise portal user could perhaps dial a toll-free number and simply ask, "Where is the nearest tag office?" This would be translated into text using the increasingly more accurate speech-to-text processors and fed through a natural language interfaced knowledge base. If an answer is found, the text could be converted back to speech and spoken to the constituent on the phone. If not, a customer service representative could answer the phone to help, much like directory assistance today.

### **Supportive**

The purpose of the Georgia state enterprise portal is to enhance the quality and efficiency of state government for the constituent. To be supportive, the State's portal must be designed around the goals of the constituents. It also must be reachable by all constituents.

### **Outcome Based**

Like all bureaucracies, state government tends to focus on processes rather than outcomes.

The Georgia state enterprise portal must model processes based on outcomes. If a logical outcome that serves the public interest in some way cannot be identified, the process should be eliminated. For those remaining outcomes that actually serve the public interest in some way, streamlining the associated processes could make those outcomes more easily reachable. The state's portal, therefore, must incorporate a strong process management system into its architecture.

For example, if a constituent has a desired outcome of "go to college", there is a lengthy process to reach this goal. Some of these steps might take place interactively online (request information, apply). Some steps might be initiated automatically between state agencies (send transcripts, send proof of immunization). Finally, some steps will not necessarily involve technology at all (visit campus, attend interview).

Regardless of how a particular process takes place, the user should always be able to use the state's portal to see where they are and what they may need to do next. In the college example, the sending of a transcript takes place behind the scenes. When this happens successfully, those parties must send a message back to the portal so that the appropriate step may be noted as complete. Some steps, such as the interview, may be solely manual processes. In these cases, the portal should allow the constituent to "check off" the completed steps so that he knows he can move on to the next one.



## **Community Oriented**

The portal will be most effective towards meeting the goals of the State of Georgia if it takes a community orientation. Many goals in the public interest are met through a combination of public federal, state, and local grants and national and local private foundations. The portal should create an environment that connects the constituent to any of the needed resources even if the state is not directly involved in service delivery.

Communities can be defined in terms of interest. For example, the parents of a child with Down's Syndrome rely on many resources to survive. The state of Georgia has a goal to keep the number of institutionalized individuals to a minimum. As such, the state provides some cash benefits to the child, as does the federal government. Community organizations and support groups also assist parents with this challenging responsibility. The state's portal should work to connect parents to those resources regardless of whether the state delivers them. Other than simply being the right thing to do, it serves the public interest by potentially keeping these children at home rather than in state-operated institutions.

Cultural differences among Georgia's constituents also point to the need for a community-centric approach. The Spanish-speaking population in Georgia has more needs from the state than language translation. Older individuals have certain unique needs that teenagers do not have and vice-versa. Individuals with differing physical abilities, such as those who are deaf, have a long history of creating a community to address shared challenges.

Communities can also be defined in terms of geography. Georgia is a very large state with nearly half its population

living within the sprawl lines of Atlanta and the other half outside. Many of the needs of these two halves are different and at times competitive. Although the state's portal will almost certainly localize to individual towns and counties, it is also important for the portal to create a sense of "Georgia" that all constituents can share. The idea of reinforcing the idea of "Georgia" as a tangible place will become increasingly important by the end of this decade when many in the workforce will be able to live anywhere they like.

## **Ubiquitous**

The Georgia state enterprise portal is not just a website. The goal of the portal is to make any door in Georgia state government a gateway that connects a constituent to any service he or she may need. For this reason, it is crucial to isolate the concept of "website" from "portal" in the earliest stages. While web browsers on a personal computer are the easiest to understand in terms of development, they only represent a particular type of interface.

Although most people today think of the Internet in terms of PCs and websites, it has become clear that in the future the majority of the population will regularly touch the Internet in ways we consider non-standard today. For example, by 2003, it is expected that more people will be able to access the Internet from a handheld phone than from a personal computer. The proliferation of other thin devices will make it impossible to take a narrow view of the presentation layer.

Other potential constituent interfaces to the state's portal include kiosks, set-top boxes for televisions, call centers and even old-fashioned, face-to-face interactions. The goal of the portal should not be to make every process electronic. In-

stead, the portal should facilitate and streamline processes to make them more efficient and effective. While self-service applications certainly make a lot of sense, not all Georgia constituents will be able to operate these applications on their own, and the portal must work for them as well.

### **Trusted**

Government carries a greater burden of creating a trusted environment for a stakeholder than private enterprise. In the Georgia state enterprise portal, trust can only be obtained by making systems secure, private, and reliable.

### **Secure**

Technologies exist today to encrypt data on a packet-by-packet basis that, at least in the short run, can prevent exposure of sensitive data to non-authorized parties. While communication within an enterprise portal should be encrypted, methods of ensuring secure encryption should regularly change as gray-hat hackers defeat various encryption schemes in the name of public good.

Unfortunately, security is fundamentally a policy issue rather than technology issue. Security policy depends on consensus from all parties involved in a transaction. Although it is possible to implement 128-bit triple DES encryption schemes, it will be of no use if stakeholders protect their private keys with a password of, "password." However, enforcing security too aggressively creates an unfriendly interface. Finding the correct balance will be a considerable challenge.

Additionally, the Georgia state enterprise portal must insist that information and applications developed at state agencies meet certain security standards. It will be very important for the stakeholders to

feel as if their personal transactions through the state portal are made in a secure environment.

### **Privacy**

From the standpoint of effectiveness and efficiency, the union of systems through an enterprise portal creates a very clear business benefit. Overlapping systems begin to share resources. For example, welfare caseworkers are able to connect their clients to new programs and offerings without the client having to enter personal data multiple times, therefore greatly diminishing data entry. Unfortunately, abuse or misuse of a unified constituent record is a real possibility. Georgia's constituents trust the state with more personal information than any other government entity. While the Social Security Administration may have record of the name, date of birth, and income information of an individual, the state of Georgia possesses that information plus, for most adults, a photograph, fingerprint image, driving record, welfare information, public health visits and more.

It is not wise to underestimate how constituents will react to the privacy issues associated with the state's portal. Imagine if the state of Georgia announced that it would no longer control technology and was instead shipping all constituent information it currently stored to the federal government, which would then create a federally controlled database of citizen's information. Even if very rational reasons are provided and assurances are made that the information will always be secure, constituents would not likely accept it.

Existing privacy policy also must be examined. While certainly this issue touches many outside the state, the concept of unifying views of constituent information through a government portal is

unprecedented and its effects unknown. Additionally, the state's portal, for the sake of Customer Relationship Management and personalization, will capture information the state did not previously capture. Is a record of the user's click-through path on the portal available to law enforcement? Should parents be allowed to know if their child visits a family planning website?

If one agrees that information is an asset, the issue of who owns the information captured within the state's portal must be considered. As the move from an industrial to information economy continues, personal information takes on value that it never had.

For these reasons, four general constituent rights should be considered to guide privacy policies for the information collected by the state's portal:

- ♦ Right to know when information is being collected, directly or indirectly
- ♦ Right to know the intent of collection and how and where information will be disseminated
- ♦ Right to withhold consent if the record holder decides to disseminate more broadly than originally contemplated
- ♦ Right to view, update, or dispute outmoded or incorrect personal information

The Platform for Privacy Preferences (P3P) initiative sponsored by the World Wide Web Consortium (W3C) should be watched very carefully. P3P is a technology standard that can be used to support a privacy policy that is written in a particular manner by serving as a negotiator between a user's browser and a server. Although the technology coming from

this initiative is in beta mode and limited to traditional web offerings, it provides an excellent model for implementing a privacy model that negotiates a common ground between parties with competing desires regarding information sharing.

### **Reliable**

When constituents pick up the phone and dial 911, they exhibit a great deal of faith in technology that a certain sequence of events will occur. Georgia state government should strive to achieve at least that level of faith from its constituents when they visit the Georgia state enterprise portal. The uptime requirements for the portal will be greater than any single web site in the state today, and state government should expect that meeting those requirements will be expensive.

While many people probably take it for granted that they can essentially order any product they like from the Internet and have a great amount of certainty that the product will be delivered, other Georgians are still adjusting to the idea of interacting with a computer at all. A user will only have to submit one form that returns an error page for his or her faith in the state's portal to be permanently damaged.



## Preliminary Architecture

The architecture required for building an enterprise portal is directly related to the business requirements of the intended portal. An architecture for an enterprise portal for the state of Georgia could potentially have several thousand business and user requirements. However, one can broadly speculate about the architectural components of an enterprise portal for the state of Georgia without readily defined business requirements by making the following assumptions:

- The portal will be available to all Georgia constituents regardless of location and connection device.
- The portal will serve as the primary means of delivering state information and services to the public.
- All state services will be available through the portal.
- The portal will not require the re-engineering of all state backend systems.
- The portal will be available on a 24 hour-a-day, seven-days-a-week basis.
- Assistance with services delivered through the portal will be available from a human representative on a 24 hour-a-day, seven-days-a-week basis.

The above assumptions are broad enough to capture the general needs of the portal. Each of these requirements affects the underlying technical architecture of the portal. The first requirement is the most demanding in terms of architecture decisions. It also adds an extra dimension to the term portal. Since the portal would have to support numerous types of con-

nection devices—such as telephones, computers and handheld devices, there is a need for an effective way to manage and organize content to allow all content to be funneled through the various channels. The remaining assumptions determine the reliability standards of the portal and the relationship between the portal, specifically the portal's middleware, to backend state systems.

### Architecture Components

The preliminary architecture for Georgia's state enterprise portal at a high level relies on a standard three-tier configuration. Each of these tiers are further subdivided into many sub-components. The backend of the portal subcomponents are composed of state systems, both legacy and contemporary, fitted with connection modules that allow those services to be delivered through the portal. The middleware of the portal consists of four foundation services that provide the logic necessary to present the information and services to a vast array of devices. Finally, the front-end of the portal consists of presentation systems fitted with connectors to transform content and services delivered from the portal middleware into a device specific presentation layer.

### Service Manager

The Service Manager is the first foundation layer of the portal's middleware. It is composed of four sub-components including a Service Router, Auditor, Content Manager and a Common Services Repository.

As its name suggests, the Service Manager foundation layer provides connectivity between the various state services

through its service router subcomponent. The service router also provides connectivity to external services offered by other organizations, such as other states.

The Auditor sub-component serves as a repository for the regulations governing the privacy standards involved in sharing data among disparate state services. This sub-component prevents both intentional and unintentional data sharing that could potentially violate the portal's privacy policy or regulations. In doing so, it provides users with anonymity to systems that may have information they may not want associated with themselves, such as information concerning sexually transmitted diseases.

Content management will be a crucial function in the presentation of data to the user. Specific content will be associated with a given service as defined by the service provider. This makes the service provider responsible for content, but not the overall presentation of the information. That presentation functionality exists in a different foundation layer of the portal's middleware.

The connection between the portal's middleware and backend systems is a two-way connection. As such, common services like credit card payment will live in the portal's service manager so that legacy systems will have access to these common services as well as the portal. Additionally, this prevents the need to completely rewrite legacy applications to incorporate additional enterprise-wide functionality.

### **Process Manager**

The portal cannot be effective if the processes to meet constituent goals are not clearly defined. In addition, process improvement cannot take place until the existing processes are clearly defined.

The goal of the Process Manager foundation component is to connect the needs of the constituent (from the Personalization foundation component) to the services and information available from the state (from the Service Manager foundation component). GTA expects to find nearly identical steps in many processes that may become candidates for centralized components. Unless the Process Manager foundation component is in place, it will be very difficult to spot those opportunities.

The Customer Relationship Manager (CRM) is a sub-component that is shared between the Process Manager foundation component and the Personalization foundation component. The purpose of CRM within the Process Manager foundation component is to provide a hook to people and process, such as through a call center.

### **Personalization**

The portal will be most effective when it can identify a constituent. This identity may be very broad ("lives in Atlanta") or very specific ("John Doe, 31, male"). The Personalization foundation component is responsible for storing information about a person that has been provided or inferred.

A sub-component of the Personalization foundation component is a directory service. The drive for a directory service for the state has been around for several years, and the portal perhaps provides the best opportunity to introduce one. In addition to the centralized storage, this gives the state government a springboard for a public key infrastructure (PKI).

The Customer Relationship Manager sub-component exists in the Personalization foundation component as well. It assists in organizing the users of the portal into

affinity groups. Online retailers use this type of technology to add sales. State government can use this technology to connect constituents to new services they may need. Because this information exists only within the Privacy Firewall, this information is not shared with any other state entity without the express permission of the user.

### **Interface Manager**

The proliferation of new Internet-enabled devices makes it dangerous to dictate how users will access the portal. Because this area is expected to remain in constant flux, abstracting the presentation of the portal is essential. This is the job of the Interface Manager—connecting the portal backend to the constituent's front end.

The Interface Manager foundation component should be treated as importantly as any other layer. Regardless of the strengths of architecture in other areas,

the interface will define the portal to constituents and will likely be the main area of concern.

Cultural and physical differences in constituents must be handled at some point within the portal. Language differences must be addressed to reach the broadest numbers of constituents. These concerns are addressed in the interface layers because language and context (the interface) cannot be isolated. For example, Braille devices for computers provide both an interface (the servos that activate a reading pad) and a language (the raised dot patterns that are interpreted by the users).

This preliminary architecture of the enterprise portal for the state of Georgia takes into consideration the aforementioned requirements and the need for the portal to evolve in the future. As additional requirements are developed, the architecture will continue to transform to meet these additional needs.



## Preliminary Issues

### **Funding for Portal Development and Support**

Although this is an important issue, no funding approach is determined at this stage in the research process. However, it is believed that the future iterations of the Georgia state enterprise portal will become the primary “face” of state government for many constituents. As such, the portal would then become a necessary piece of the state’s infrastructure and should be funded accordingly.

### **Agency Participation and Buy-in**

The development of the portal will require significant assistance from state agencies. At present the exact roles that agencies will play in the development and support of the portal is not clear. Among other uncertainties, there remain questions regarding the ownership of the presentation of content of different agencies that has been repackaged in a way to present the user with seamless information.

Given the importance of agency participation in the initial development and ongoing evolution of the portal, some measure of agency partnership is desired. The preliminary ideas regarding this agency buy-in do not yet reflect a complete understanding of branding needs of state agencies to make specific recommendations.

The believed importance of agency consensus has been validated by the experience of Washington State’s Access Washington team. They believe that executive level support and agency cooperation were crucial elements to their initial and continued success. The Access Washing-

ton team relied upon existing state committees to coordinate among the different agencies. These committees include the Information Services Board, Digital Government Steering Committee and Technical Advisor Group.

The Information Services Board is composed of agency heads, legislators and the state Chief Information Officer, and is headed by the Governor’s Chief of Staff. The board is responsible for coordinating and developing policy recommendations.

The Digital Government Steering Committee includes the assistant and deputy directors of the state agencies, both elected and appointed. The task of the steering committee is to overcome pressing business issues of the state and to provide a venue to promote cooperation among the different state agencies. The Technical Advisory Group (TAG) advises this group.

TAG tackles technical issues regarding the Access Washington portal as well as the outstanding technical concerns of the different state agencies. Members of this group include the technical members of the Access Washington portal team; technical, private industry experts; and technical personnel from the various state agencies.

Although GTA is not advocating that the state of Georgia duplicate the state of Washington’s Information Services committee structure, the creation of an organizational structure that will provide for the ready cooperation and buy-in among the state agencies is clearly needed.

### **Interim Portal Development and Infrastructure Standards**

Developing the portal as envisioned in the preliminary architecture will require a significant investment in time and resources. During this time, state agencies will continue to develop systems that will ultimately interface with the portal. In order to resolve the inevitable conflict between the aforementioned tasks, portal development and infrastructure standards will need to be developed to provide guidance to the state agencies in

making the transition from their current silo systems to an integrated statewide portal. These interim portal standards need to address both physical and software architectures.

### **Security and Privacy**

Developing a privacy policy and security standards will be crucial to the success of the portal. The portal will have to establish a level of trust with constituents to be an effective alternative to brick and mortar services.





## Proposed Next Steps

The following is a list of the proposed next steps that the state of Georgia plans to take in the process of developing a new state portal. All of these steps are based on the noted research.

- ♦ Name the strategy plan development project and identify a GTA extended virtual team.
- ♦ Validate proposed architecture with experts (GTA Enterprise Systems, Gartner portal expert or other). Identify the high-level steps needed to implement.
- ♦ Write specifications and award a contract for expert assistance in planning the Georgia state enterprise portal. Deliverables should include: interim development and infrastructure guidelines, the identification of critical plan elements necessary for the iterative development of a fully intention-based portal (phases, milestones, timeline, and other deliverables), and the identification of portal-related procurements.
- ♦ Resolve preliminary issues identified in Discovery Phase.
- ♦ Collaborate with appropriate agencies through the Digital Academy concept to develop a Health and Human Services pilot portal (make sure it aligns with preliminary business and architecture requirements identified to date). Compile lessons learned information.
- ♦ Work with GeorgiaNet e-Marketing to develop market sensing/focus group plan to validate pilot portal's usability and portal business requirements.
- ♦ Continue to research and consult with portal experts, other government entities and private sector leaders. Compile results.
- ♦ Participate in the National Association of State Information Executives' (NASIRE) component reuse initiative and commit representation to its Information Architecture Committee.
- ♦ Work with GeorgiaNet e-Development/e-Marketing teams to continue implementing interim Georgia state government website enhancements to transform the current website into more of a functioning intention-based portal.

## Appendix One: Portal Architecture Straw Model

